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of some organic compound of nickel. The color of the yellow barite of Cumberland is caused by a hydrated ferric oxid. While some of the conclusions of the article may not be as certain as the authors believe, it is one of the best worked-out papers which has appeared on the subject.

A CAREFUL study of the precipitated sulfids of antimony is given by Otto Klenker in the *Journal für praktische Chemie*. The precipitate by hydrogen sulfid from solutions of quinquevalent antimony varies in color from light or dark brown to red and orange; from acid or neutral solutions it is flaky, settles easily and when dry is electric and not hygroscopic; from alkaline solutions it is fine and does not settle, when dry is very hygroscopic but not electric. Its composition is always variable, being a mixture of  $Sb_2S_5$ ,  $Sb_2S_3$  and free sulfur. From a strongly alkaline solution no  $Sb_2S_5$  is precipitated, but this increases until a maximum of  $Sb_2S_5$  (over 95%) is present when the solution contains 12% free hydrochloric acid. If the acid increases above this the amount of  $Sb_2S_5$  diminishes owing to its solubility in strong hydrochloric acid. In a hot acid solution no  $Sb_2S_5$  is formed, differing thus from quinquevalent arsenic solutions which are completely precipitated as  $As_2S_5$  from hot acid solutions. When the mixed precipitate of antimony sulfids and sulfur is dissolved in caustic soda the reaction for trivalent antimony is not given with ammonial silver solution, as the alkaline solution of mixed  $Sb_2S_3$  and  $S_2$  acts as  $Sb_2S_5$ . On the other hand, if the free sulfur is previously removed with carbon bisulfid the reaction is obtained.  $Sb_2S_5$  is, however, not decomposed appreciably under 100° by carbon bisulfid or any other solvent of sulfur.

PAUL BOURCET has proposed in the *Comptes Rendus* a new method for the estimation of iodin in organic matter, which consists in fusing the substance with caustic potash, neutralizing with sulfuric acid and freeing from other salts by repeated precipitations with alcohol. The iodin is liberated in the presence of carbon bisulfid by nitrous acid vapors and estimated colorimetrically. The quantity of iodin in a large number of different kinds of fish was

determined and found to vary from nearly two milligrams per kilo in *clupea harengus*, and 1.4 mg. in *salmo salar*, down to 0.3 mg. in *merlangus vulgaris*, *scomber scombrus*, *esox lucius*, 0.2 mg. in *raia clavata*, and 0.1 mg. in *truita marina*.

IN the course of investigations on the effect of low temperatures upon steel it has been found by F. Ormond that nickel steels, if non-magnetic to begin with, acquire magnetic properties after five minute's immersion in liquid air. If most of the nickel is replaced by manganese the same is true. Carbon steel with 1.4 to 1.6 per cent. carbon, after being immersed in liquid air and then brought back to ordinary temperature, is found to be profoundly modified. There is an increase in magnetic permeability and in permanent magnetism, and the density is decreased from 7.798 to 7.692. The polish upon a surface disappears.

J. L. H.

#### BOTANICAL NOTES.

##### SPRUCE AND PINE FORESTS OF WEST VIRGINIA.

IN an interesting bulletin (No. 56) of the West Virginia Experiment Station, Professor Hopkins reports the results of an investigation of the cause of the unhealthy conditions of the spruce and pine of that State, and incidently gives us a good deal of information regarding its spruce and pine forests. The spruce (apparently *Picea rubens* Sargent) is a tall, straight tree, two to three feet in diameter, and more than one hundred feet in height. It is abundant at and above 3,000 feet above sea level, and is seldom found below 2,300 feet, and reaches its highest development in the region about the headwaters of the Cheat, Valley, Greenbrier, Elk and Gauley Rivers. In this region it commonly grows on a soil which is described as "little else than a mass of broken stones, which is literally filled with water at all seasons of the year." After studying the problem carefully, Professor Hopkins concludes that the area originally covered by spruce forests included all of the higher elevations of the Appalachian range that rise above 2,400 feet, or, in other words, about 2,000,000 acres, and on this area "one-half of the timber was probably spruce." The author discusses the reduction of this original forest area, and concludes that "the

total merchantable spruce timber now standing would not be equivalent to much over 225,000 acres of pure spruce forests, averaging 15,000 feet of lumber to the acre."

The pines of the forests of the State are five in number, as follows: White Pine (*Pinus strobus*), widely distributed over the State; Yellow Pine (*Pinus echinata*), in the eastern, southern and western sections of the State; Pitch Pine (*Pinus rigida*), widely distributed over the State; Scrub Pine (*Pinus virginiana*), growing where other pines will not thrive; Table Mountain Pine (*Pinus Pungens*), common in old highland fields and on the mountains and foothills of Hampshire, Grant, Mineral and Pendleton counties. "It is evident," the author says, "from available records and present indications that at one time, possibly not later than 250 years ago, the predominating forest trees over large areas in the southwestern third of the State, as well as in the southern and eastern sections, were pine, and that the isolated forests, and the groups and individuals of the white, yellow, pitch, scrub and table mountain pines that we find at present, are living examples and lineal descendants of extensive primitive forests of one or more of the species mentioned." As illustrating the rapid destruction of the forests, the author says, further: "In the present pine areas of the State I would judge that ninety per cent. of the merchantable pine timber has been removed or has died."

#### STUDIES OF THE SPECIES OF EUPHORBIA.

IN a recently published paper issued by the Missouri Botanical Garden, Mr. J. B. S. Norton revises the North American species of *Euphorbia* of the Section *Tithymalus* occurring north of Mexico. No general work on the North American species of the Section *Tithymalus* has appeared since Boissier's monograph of the genus as a whole in De Candolle's 'Prodromus,' published in 1862, although a number of new species have been described. Engelmann, and recently Millspaugh, studied the genus in this country, but the section under consideration sadly needed revision at the time Mr. Norton took it up, two and a half years ago, at the suggestion of Dr. Trelease. As a result of Mr. Norton's studies, we have here an arrangement

and description of thirty-six species and twelve varieties, accompanied by forty-two well-drawn plates. It is encouraging in these days of species-making to find that although the author is working over a group which has not undergone revision for thirty-seven years he separates but one new species! When it comes to varieties he is able to get along with but seven new ones, and he calls them *varieties* and not *species*. Such caution in the treatment of species and varieties is to be most heartily commended, and we should be glad to see much more of it in the work of monographers. The author follows Boissier's system of classification with little modification, and appends a diagram showing his ideas as to the relationship of the species. He makes no attempt to revise our notions as to the morphology of the flowers and flower-clusters, accepting these as ordinarily treated in standard works.

#### BOTANY IN IOWA.

THE Sixth Volume of the Proceedings of the Iowa Academy of Sciences (1898) contains nine botanical papers, as follows: 'Preliminary Report on the Diatoms of Iowa,' by P. C. Myers, being a general paper on collecting these plants; 'Report on a Fossil Diatomaceous Deposit in Muscatine County, Iowa,' by P. C. Myers, cataloguing fourteen species; 'Diatomaceous Earth in Muscatine County,' by J. A. Udden, describing the locality of the preceding deposit; 'Forest Trees of Adair County, Iowa,' by J. E. Gow, illustrated by a map, and including a catalogue of thirty-one species, several of which are mere shrubs, as Dogwood (*Cornus paniculata*), Sumac (*Rhus glabra*), Elderberry (*Sambucus canadensis*), Hazel (*Corylus americana*), Wild Grape (incorrectly given as *Vitis Aestivalis* instead of *V. vulpina* of Linnaeus, or *V. riparia* of the older manuals); 'Effects of a Sleet Storm on Timber,' by J. E. Gow, accompanied by photographs of injured trees; 'The Iowa Liverworts,' by B. Shimek, giving a list of twenty-one species; 'A Preliminary List of the Mosses of Iowa,' by T. E. Savage, being an annotated list of seventy-eight species; 'Additions to the Bibliography of North American Lichens,' by Bruce Fink, including ninety-five titles; 'The Flora of

Southern Iowa,' by T. J. and M. F. L. Fitzpatrick, including a catalogue of several hundred species of flowering plants and ferns.

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*THE SCHOOL OF GEOGRAPHY AT OXFORD UNIVERSITY.*

THE recent founding of a School of Geography at Oxford University is an event of more than passing interest to the educational and scientific world, and deserves a word of comment on this side of the water. The Royal Geographical Society has long deplored the lack of opportunity for geographical training in Great Britain and has been endeavoring to get geography properly recognized in both university and school. Over fifteen years ago the present Secretary of the Society, Dr. J. Scott Keltie, made a careful study of the status of geography teaching in the schools of Great Britain, and published a complete report that has been of great and permanent value. For the last few years readers have been maintained in Geography at both Oxford and Cambridge, largely through the efforts of the Society. At the same time, at the Society's rooms, training has been giving to prospective travellers in the art of surveying and in the other scientific lines of value to all explorers. The success of these various lines of work has led to the establishment of the School at Oxford, under the joint auspices of the Society and the University. Each institution will contribute £400 annually, and the management of the School will be vested in a committee, consisting of the Chancellor *ex-officio*, of three nominated by the Council of the Royal Geographical Society and three nominated by the Delegates of the Common University Fund.

The School will start with a staff of four members, consisting of the present Reader, Mr. H. J. Mackinder, M.A.; the Assistant to the Reader, Andrew J. Herbertson, Ph.D.; a Lecturer in Physical Geography, Mr. H. N. Dickson, F.R.S.E., and for the year 1899-1900 a Lecturer in Ancient Geography, Mr. G. B. Grundy, M.A.

The work of the School will include a course in systematic instruction primarily in-

tended for graduates and other advanced students, with demonstrations and practical work in physical geography, cartography and surveying. Courses of lectures will also be given with special reference to the historical and scientific teaching in the University.

Sir Clements Markham, in his annual address to the Royal Geographical Society, spoke at length in reference to the project and outlined a large field of results to come from the increased opportunities in geographical training. He particularly emphasized the fact that the School would be open to all, whether attached to the University or not.

It is to be hoped that the enterprise may succeed abundantly, and certainly it is fitting that the leading commercial nation of the world should undertake to give its young men training in an important branch of education, whether in preparation for business or political life. The importance of geography in commerce has long been recognized by certain leaders in Great Britain, but the necessary steps for bringing about commercial progress through increased geographical training have been too long deferred. This School is the only one in Great Britain and should fill a long standing need. With the opportunities at Bruxelles and at Oxford, both of which have recently been established, geography has received a recognition that ought to be a lesson to this country, especially to the authorities of our many large universities that have no chairs in this science.

R. E. D.

*SCIENTIFIC NOTES AND NEWS.*

DETAILS have reached us in regard to the approaching meeting of German men of science and physicians, which will be held at Munich, from the 17th to the 23d of September. The Congress will be divided into no less than thirty-seven sections, of which seventeen are in the natural sciences and twenty in medicine. There will be two general sessions of the whole Congress, at each of which three lectures will be given. These will be 'The Results of My Expedition to the North Polar Regions,' Dr. Fritjof Nansen; 'Radiography in the Treatment of Surgical Diseases,' Professor von Bergmann; 'The Change in the Astronomical View